

236305

SEMS 1533662

TO: Marc Herman/EPA

FROM: Al Eddebbagh/CH2M HILL  
Gary Hermann/CH2M HILL

DATE: December 2, 1991

SUBJECT: Lowry Landfill OUs 1 and 6 Groundwater Modeling-Related  
Coalition's Submittals to EPA

PROJECT: DEN68021.AR.EA

FILE PLAN

18-32

Enclosed are documents, drawings, and computers discs, related to groundwater modeling, we received from the Coalition's consultant on behalf of EPA. The following lists the items received to date from the Coalition's consultant and the date the items were received:

- Standard input files for the Modflow groundwater flow model. Those file were received on October 21, 1991. A copy of those files comprise disk A.
- Standard input files for the MT3D groundwater transport model. Those files were received on October 31, 1991. A copy of those files comprise disk B.
- Copies of two overheads describing (1) modeled transmissivities and (2) the method used to calculate general head boundary conductance. These were received on November 7, 1991.
- Copies of overhead of the model domain grid, stream locations, the model layers, and the source configuration. Those copies were received from the Coalition's consultant at one of the working session.

Other information regarding input to both the flow and transport models could be extracted from the input files. If you need additional information or have any questions, please call.



# Initial Versus Final Parameter Estimates

## Transmissivity (ft<sup>2</sup>/day)

	Initial	Final
Layer 1 (weathered DAWSON)	0.5 - 5.0 - 15	0.5 - 5.0 - 15 $A_{OC} \approx 1.83$
Layer 2 (unweathered Dawson)	0.05 - 7	0.25 - 7 $A_{OC} 3.63$
Layer 3 (separation Layer)	0.0015 - 4	0.015 - 4
Layer 4 (DENVER)	0.15 - 3	0.5 - 3
Layer 5 (Lignite)	0.2 - 2	0.5 - 2
Layer 6 (Lower DEN)	120	120
Layer 7 (Arapahoe)	125	125

## Vertical Conductance (day<sup>-1</sup>)

	Initial	Final
Layer 1 - Layer 2	$1 \times 10^{-7}$ - $5 \times 10^{-7}$ - $1 \times 10^{-4}$	$1 \times 10^{-6}$ - $5 \times 10^{-6}$ - $1 \times 10^{-3}$
Layer 2 - Layer 3	$2 \times 10^{-7}$ - $7 \times 10^{-7}$ - $1 \times 10^{-3}$	$1 \times 10^{-6}$ - $3.5 \times 10^{-6}$ - $5 \times 10^{-3}$
Layer 3 - Layer 4	$2 \times 10^{-7}$ - $5 \times 10^{-7}$ - $1 \times 10^{-5}$	$2 \times 10^{-7}$ - $5 \times 10^{-7}$ - $5 \times 10^{-6}$
Layer 4 - Layer 5	$1 \times 10^{-6}$ - $1 \times 10^{-5}$	$5 \times 10^{-7}$ - $5 \times 10^{-6}$
Layer 5 - Layer 6	$8 \times 10^{-4}$	$1.6 \times 10^{-7}$ $^{+3.2 \times 10^{-7}}$
Layer 6 - Layer 7	$8 \times 10^{-6}$	$1.28 \times 10^{-8}$



# Procedure for Developing General Head Boundaries

$$1. C = \frac{TW}{L}$$

← CHB Length

T = Estimated transmissivity

$$W = \sqrt{L \times D}$$

← Cell Row Width

↓ Cell Column Width

$$L = 0.1$$

1000 feet

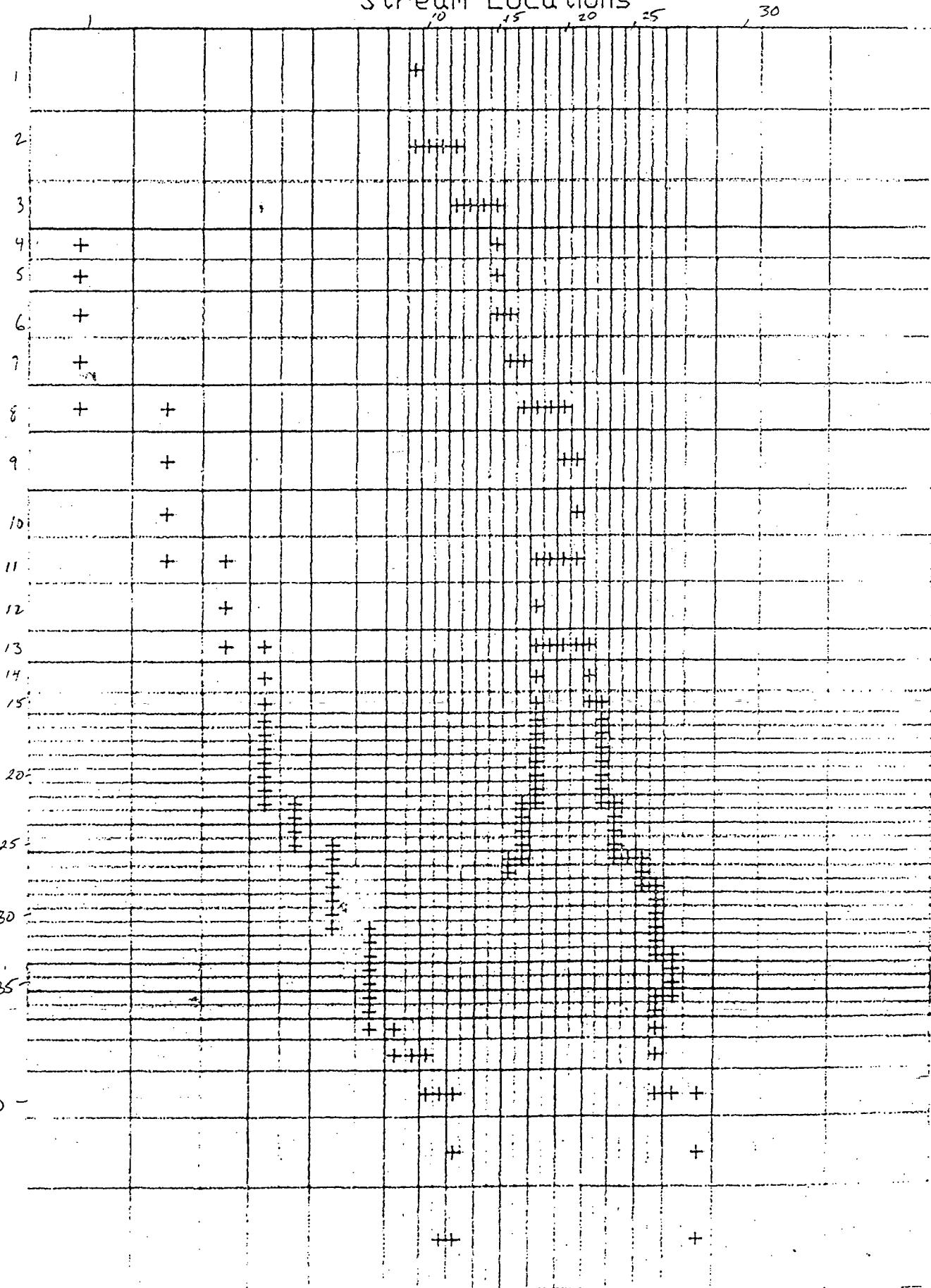
↑ CHB Length

2.  $H_0$  is specified from initial potentiometric surfaces



= Cells have  $T = 300 \text{ ft}^2/\text{h}$

### Stream Locations



Lowry Grid

11

Columns(j)

A hand-drawn diagram on graph paper illustrating three distinct layers of boundary conditions across 32 columns (x=1 to x=32).  
Layer 1 (Top): A thick horizontal line spanning all 32 columns.  
Layer 2 (Middle): A thick horizontal line spanning all 32 columns, with a small gap or opening at column x=18.  
Layer 3 (Bottom): A thick horizontal line spanning all 32 columns, with a gap at column x=18 and a vertical line extending downwards from this gap, creating a T-junction at approximately y=65.

Colm

Layer 4  
Layer 5  
Layer 6 = Layer 7

1 (1993093)

This image shows a crossword puzzle grid on graph paper. The grid is approximately 20 columns wide and 30 rows high. Handwritten answers are provided for many of the clues:

- Across 10: X X X
- Down 10: X X X
- Across 20: X X X
- Down 20: X X X
- Across 30: X X X
- Down 30: X X X
- Across 40: X X X
- Down 40: X X X
- Across 50: X X X
- Down 50: X X X
- Across 60: X X X
- Down 60: X X X
- Across 70: X X X
- Down 70: X X X
- Across 80: X X X
- Down 80: X X X
- Across 90: X X X
- Down 90: X X X
- Across 100: X X X
- Down 100: X X X
- Across 110: X X X
- Down 110: X X X
- Across 120: X X X
- Down 120: X X X
- Across 130: X X X
- Down 130: X X X
- Across 140: X X X
- Down 140: X X X
- Across 150: X X X
- Down 150: X X X
- Across 160: X X X
- Down 160: X X X
- Across 170: X X X
- Down 170: X X X
- Across 180: X X X
- Down 180: X X X
- Across 190: X X X
- Down 190: X X X
- Across 200: X X X
- Down 200: X X X
- Across 210: X X X
- Down 210: X X X
- Across 220: X X X
- Down 220: X X X
- Across 230: X X X
- Down 230: X X X
- Across 240: X X X
- Down 240: X X X
- Across 250: X X X
- Down 250: X X X
- Across 260: X X X
- Down 260: X X X
- Across 270: X X X
- Down 270: X X X
- Across 280: X X X
- Down 280: X X X
- Across 290: X X X
- Down 290: X X X
- Across 300: X X X
- Down 300: X X X
- Across 310: X X X
- Down 310: X X X
- Across 320: X X X
- Down 320: X X X
- Across 330: X X X
- Down 330: X X X
- Across 340: X X X
- Down 340: X X X
- Across 350: X X X
- Down 350: X X X
- Across 360: X X X
- Down 360: X X X
- Across 370: X X X
- Down 370: X X X
- Across 380: X X X
- Down 380: X X X
- Across 390: X X X
- Down 390: X X X
- Across 400: X X X
- Down 400: X X X
- Across 410: X X X
- Down 410: X X X
- Across 420: X X X
- Down 420: X X X
- Across 430: X X X
- Down 430: X X X
- Across 440: X X X
- Down 440: X X X
- Across 450: X X X
- Down 450: X X X
- Across 460: X X X
- Down 460: X X X
- Across 470: X X X
- Down 470: X X X
- Across 480: X X X
- Down 480: X X X
- Across 490: X X X
- Down 490: X X X
- Across 500: X X X
- Down 500: X X X
- Across 510: X X X
- Down 510: X X X
- Across 520: X X X
- Down 520: X X X
- Across 530: X X X
- Down 530: X X X
- Across 540: X X X
- Down 540: X X X
- Across 550: X X X
- Down 550: X X X
- Across 560: X X X
- Down 560: X X X
- Across 570: X X X
- Down 570: X X X
- Across 580: X X X
- Down 580: X X X
- Across 590: X X X
- Down 590: X X X
- Across 600: X X X
- Down 600: X X X
- Across 610: X X X
- Down 610: X X X
- Across 620: X X X
- Down 620: X X X
- Across 630: X X X
- Down 630: X X X
- Across 640: X X X
- Down 640: X X X
- Across 650: X X X
- Down 650: X X X
- Across 660: X X X
- Down 660: X X X
- Across 670: X X X
- Down 670: X X X
- Across 680: X X X
- Down 680: X X X
- Across 690: X X X
- Down 690: X X X
- Across 700: X X X
- Down 700: X X X
- Across 710: X X X
- Down 710: X X X
- Across 720: X X X
- Down 720: X X X
- Across 730: X X X
- Down 730: X X X
- Across 740: X X X
- Down 740: X X X
- Across 750: X X X
- Down 750: X X X
- Across 760: X X X
- Down 760: X X X
- Across 770: X X X
- Down 770: X X X
- Across 780: X X X
- Down 780: X X X
- Across 790: X X X
- Down 790: X X X
- Across 800: X X X
- Down 800: X X X
- Across 810: X X X
- Down 810: X X X
- Across 820: X X X
- Down 820: X X X
- Across 830: X X X
- Down 830: X X X
- Across 840: X X X
- Down 840: X X X
- Across 850: X X X
- Down 850: X X X
- Across 860: X X X
- Down 860: X X X
- Across 870: X X X
- Down 870: X X X
- Across 880: X X X
- Down 880: X X X
- Across 890: X X X
- Down 890: X X X
- Across 900: X X X
- Down 900: X X X
- Across 910: X X X
- Down 910: X X X
- Across 920: X X X
- Down 920: X X X
- Across 930: X X X
- Down 930: X X X
- Across 940: X X X
- Down 940: X X X
- Across 950: X X X
- Down 950: X X X
- Across 960: X X X
- Down 960: X X X
- Across 970: X X X
- Down 970: X X X
- Across 980: X X X
- Down 980: X X X
- Across 990: X X X
- Down 990: X X X